

Automobile Accidents Attended by Mobile Emergency Care Service

ORIGINAL

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Abstract

Background: Automobile accidents are increasing every day and are becoming a serious public health problem due to the high morbidity and mortality rate. The goal of the current study was to characterise the traffic accidents attended by the Mobile Emergency Care Service (MECS) in Ibiara, PB.

Methods: This exploratory, descriptive, documentary study adopted a quantitative approach and analysis of data. The population consisted of all victims of traffic accidents attended by MECS in the city of Ibiara, PB, from June 2015 to June 2016. The following variables were studied: age, gender, time and day of the week the accident occurred, nature of the incident, substance ingested by the victim, wearing personal protective equipment (PPE) or not, the anatomical lesions on the victim and the body regions hit during the accident.

Results: The sample consisted of 49 accident victims, and the majority (81.6%) were male, predominately 30 to 59 years. Events occurring at night (63.3%) and during the week (65.3%) predominated. The most frequent type of accident was motorcycle fall (71.4%), with almost half having consumed alcohol (46.9%) and most not wearing PPE (77.6%). The regions of the body most affected were the lower limbs (67.3%) and upper limbs (53.1%).

Conclusion: The main factor/cause of these accidents was due to imprudence and violation of traffic laws, highlighting the need to invest

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in traffic education policies, to direct campaigns for the prevention of traffic accidents, as well as expand the surveillance of traffic laws by authorities.

Keywords

Accidents; Pre-Hospital Care;
Emergency Medical Services.

Introduction

Auto accidents have been increasing every day and are becoming a serious public health problem due to the high rate of morbidity and mortality. There are many factors associated with transportation accidents described in the literature, including: disordered urban growth, gradual increase in the number of cars in traffic, little education in traffic, adverse weather conditions, poor conditions of traffic routes, disregard for traffic laws associated with possible impunity related to traffic crimes, alcohol and direction, use of safety equipment, such as seat belts, helmets, car seats for babies and airbags, among others.

Traffic accidents have been a constant threat for users of public roads, contributing significantly to high morbidity and mortality in the population of young adults [19]. Moreover, medium and low income countries have higher rates of mortality from traffic accidents (21.5/100,000 inhabitants) compared to developed countries (10.3/100,000 inhabitants). Both suffer from this serious problem, but in different ways. While in medium and low income countries, traffic accidents have mainly victimized pedestrians, cyclists and motorcyclists, in developed countries, the main victims are occupants of four-wheel vehicles [23].

In Brazil, among violent deaths (including murders and suicides), traffic accidents are the second cause of mortality in young people between 15 and 24 years, representing about 70% of deaths in this age group. This statistic puts Brazil among the top 10 countries where traffic accidents are responsible

for more than 60% of deaths. This results in both loss of human life, as well as physical impairments due to brain and spinal cord injuries [2].

The prediction by the World Health Organization (WHO) is that in 2020 the number of deaths will reach 2.3 million and traffic accidents will be the sixth cause of death worldwide for the least developed countries. However, in high-income countries, a decline in deaths around 27% between 2010 and 2020 is projected [16].

Trauma is one of the leading causes of death from car accidents in the world, affecting a significant number of people in Brazil each year. Among the most frequent traumas in traffic accidents, thoracic and abdominal trauma are in first place, but the more lethal is Traumatic Brain Injury (TBI) [18].

Transit accidents have impacts in many different areas, in terms of physical, psychological, political, economic, as well as social and cultural aspects. Specifically, traffic accidents cause immense number of deaths, permanent and temporary disabilities, entail high financial costs, as well as pain and suffering for the victims, their families and the people who live with this fate [14].

Considering the growth in demand for services in this area in recent years, with the increase in the number of accidents and urban violence coupled with insufficient structuring assistance network, there has been an overload on the urgency and emergency services. To explore the main problems in auto accidents, we asked the following question: what are the types of auto accidents attended by Mobile Emergency Care Service (MECS) in a backland town of Paraíba (PB)?

Taking into consideration the experience of the authors in the Mobile Service of Urgency and the high incidence of traffic accidents attended by MECS in Ibiara, PB, this paper aims to explore the number of accidents, potential causes, the public served and the time and day in which they are more frequent. Therefore, the aim of this study was to analyse the auto accidents attended by MECS in Ibiara, PB.

Methods

This is an exploratory, descriptive and documentary study, with a quantitative approach and analysis of data. The research was conducted on the decentralised basis of Piancó, MECS from the city of Ibiara, located in the Northeast region of Brazil, State of Paraíba. According to the Brazilian Institute of Geography and Statistics (IBGE), in 2010 the population was estimated at 6,031 inhabitants in an area of 244 km². The Base Support Unit (BSU) serves the urban and rural areas of the municipality and a neighbouring municipality, Santana de Mangueira, PB.

The sample included 49 victims of traffic accidents attended by MECS in the city of Ibiara, PB, between June 2015 and June 2016; in this period, for two months, there was no ambulance due to mechanical problems. The data were collected in August and September 2016, using the number of occurrences of automobile accident victims, as well as the Occurrence Book from nursing, which contains details about the accidents.

Inclusion criteria were: fact sheets with readable notes and no deletions, cases recorded in the Occurrence Book. Charts that had dented or damaged leaves and/or lack of information needed to achieve the objective of the study were excluded.

The following variables were studied: demographic data such as age and gender, as well as data relating to occurrences, such as time and day of the week, nature of the incident, substance ingested by the victim, whether the victim wore Personal

Protective Equipment (PPE), the anatomical lesions on the victim and the body regions hit during the accident.

The data were analysed in SPSS Statistics (version 21). The data were described through relative and absolute frequencies, considering the sample size. Nonparametric tests including Mann Whitney, Kruskal Wallis, and Pearson Chi-square or Fisher's exact test were used. Alpha level was < 0.05.

The research was carried out with the authorisation of the Health Department of the county, taking into account the ethical aspects of research involving humans, as described in resolution number 466/2012 of the National Health Council, which regulates research involving human beings [5]. The research project was submitted to the Research Ethics Committee of the Integrated Colleges of Patos- FIP, located in the city of Patos, PB, under technical opinion number 1.710.540 and Certificate of Introduction to Ethics Assessment (CAAE) number 58525716.7.0000.5181.

Results

The study included 49 victims of accidents, with almost half of the sample (44.9%) between 18 and 27 years; the vast majority were male (81.6%).

(Table 1)

Table 1. Distribution of victims assisted by MECS of Ibiara, PB by gender and age.

Distribution of victims	N*	%
Age (years)		
< 18	2	4.1
18 - 27	22	44.9
28 - 37	10	20.4
38 - 47	10	20.4
> 47	5	10.2
Gender		
Male	40	81.6
Female	9	18.4
*: Number of victims assisted by Ibiara's MECS.		

Table 2 shows that most occurrences were during the night (63.3%) and in the work week (65.3%). However, considering the daily average, the frequency of occurrences on weekends (17.3%/day) was larger than on weekdays (13.0%/day). Motorcycle crash accidents were the majority (71.4%), with almost half having ingested alcohol (46.9%) and most not using PPE (77.6%).

Table 2. Characteristics of automobile accidents assisted by MECS of Ibiara, PB.

	n	%
Time of the occurrence		
Night	31	63.3
Daytime	18	36.7
Day of the week of the occurrence		
Work week	32	65.3
Weekend	17	34.7
Nature of the accident		
Running Over	4	8.2
Motorcycle Fall	35	71.4
Collision	10	20.4
Substances ingested by the victim		
Alcohol	23	46.9
Psychotropic	1	2.0
None	25	51.0
Use of PPE by the victim		
Yes	11	22.4
No	38	77.6

Table 3 shows that the most frequent injury was abrasions (57.1%), followed by blunt cut (36.7%). Body regions most affected were lower limbs (67.3%) and the upper limbs (53.1%), considered small accidents, upper limbs.

Table 4 presents the association of gender with the characteristics of the accidents. There were no statistically significant results. However, men compared to women had more occurrences in the mornings (37.5%), on weekends (35.0%), more motorcycle crashes (75.0%), used less PPE (80.0%) and had more cases of alcohol intake (50.0%).

Table 3. Description of the injuries sustained by victims of automobile accidents assisted by MECS of Ibiara, PB.

	n	%
Anatomical lesions on the victim		
Fracture	10	20.4
Scoring	28	57.1
Dislocation	6	12.2
Blunt Cut	18	36.7
TBI	6	12.2
Region of the victim's body affected by the accident		
Head	17	34.7
Chest	7	14.3
Abdomen	8	16.3
Lower limbs	33	67.3
Upper limbs	26	53.1

Table 4. Association of gender with characteristics of automobile accidents attended by MECS of Ibiara, PB.

Gender					
	Male		Female		p
	n	%	n	%	
Time of occurrence					
Night	25	62.5	6	66.7	0.99
Daytime	15	37.5	3	33.3	
Day of week of the occurrence					
Work Week	26	65.0	6	66.7	0.99
Weekend	14	35.0	3	33.3	
Nature of the accident					
Running Over	3	7.5	1	11.1	0.49
Motorcycle Fall	30	75.0	5	55.6	
Collision	7	17.5	3	33.3	
Use of PPE by the victim					
Yes	8	20.0	3	33.3	0.40
No	32	80.0	6	66.7	
Substances ingested by the victim					
Alcohol	20	50.0	3	33.3	0.55
Psychotropic	1	2.5	0	0.0	
None	19	47.5	6	66.7	

Table 5 shows the comparison of age and the characteristics of the accidents. The median age of victims in accidents occurring at dawn, during the

work week, collisions, and use of PPE were higher; in other words, victims in these types of accidents were older.

Table 5. Association of age with characteristics of automobile accidents attended by MECS of Ibiara, PB.

Age				
	Average	Standard deviation	Median	p
Time of occurrence				
Night	3.10	1.24	3.00	0.10
Daytime	2.50	0.70	2.00	
Day of the week of the occurrence				
Work week	3.03	1.15	3.00	0.20
Weekend	2.59	1.00	2.00	
Nature of the accident				
Running Over	2.75	1.25	3.00	0.73
Motorcycle Fall	2.83	1.07	2.00	
Collision	3.10	1.28	3.00	
Use of PPE by the victim				
Yes	2.73	1.00	3.00	0.75
No	2.92	1.14	2.50	
Substances ingested by the victim				
Alcohol	2.87	1.21	2.00	0.91
Psychotropic	3.00	*	3.00	
None	2.88	1.05	3.00	

Discussion

The results of this study indicate that being younger, even with less exposure time, presented a higher risk of traffic accidents compared to being older. This may be explained by the greater availability of credit for the purchase of motor vehicles in Brazil and by the fact that young people, especially between 18 to 27 years, do not have as much experience in traffic as older people.

Similar results were found in another study, revealing that those between 18 to 25 years old exhibited greater risk of traffic accidents in relation to the population aged 45 and older [10]. The youngest age group is considered a risk due to inexperience

with traffic, typical immature behaviours and recent acquisition of a license. Among people who reported having suffered a traffic accident, a majority were men and people who claimed to consume alcohol. An opposite result was found in another study, which reports an aged 30 to 59 years [7].

Corroborating with this research, a study showed that being male was the most prevalent kind of victim of traffic accidents assisted by MECS in João Pessoa, PB [23]. The most prevalent age group was between 21-30 years, as well as in another study [6]. The majority of victims were young and male, due to carelessness and disregard for traffic laws.

The concentration of events can occur in space, time or both. Research examining the detection of clusters in epidemiological area have shown the importance of the use of this methodology for clarification of these issues [7].

Drivers of motorcycles are considered the priority group in prevention programmes, as they face a seven times greater risk of death, four times greater body injury and twice as much pedestrian trampling compared to motorists. Motorcyclists are the main victims of traffic accidents, a position historically occupied by pedestrians [3].

The number of traffic accidents attended by MECS and advanced support vehicles, prior to the approval of the dry law, represented by the first and second quarter totalled 124 (53%) occurrences, and after implementation, accidents decreased to 110 (47%), reducing only 6% the number of accidents in six months [15]. In the fourth quarter, the number of traffic accidents increased again, from 45 to 65, while a reduction was expected, since the intention of the law was to significantly reduce the number of traffic accidents associated with alcohol consumption [15].

The consequences of the attended accidents varied, highlighting injuries, trauma and fractures in the head, femur, wrist and hand region [21]. The

high accident rates occurring in public roads characterise the predominance of these types of injuries, which were pointed out as the most important in relation to traffic and transport accidents. Slight injuries and injuries are minor accidents [8].

Regarding the types of injuries in accidents attended by MECS-BSU TBI was the most common representing 60.2% of cases, followed by traumas of extremities at 37.6%, and cardiorespiratory arrest at 15.4%. It is worth noting that trauma kinematics, the victims do not suffer from isolated trauma; an extremity fracture may be associated with TBI, chest trauma among others, usually presenting one or more lesions on the body [15].

The injured body region affected by the trauma depends on the height, the type of surface on which the victim collided and the body area that suffered the first impact, with TBI being the main cause of death in victims of a traffic accident, and the limbs as the second most affected body region attributed to the high percentage of accidents involving motorcycles [4].

Regarding the use of safety equipment, this was little mentioned in the Malta et col survey [11]. The lowest frequencies correspond to use of infant transport chair (1.8%) and the reflective vest (1.9%), while the safety belt (43.2%) and the helmet (65.4%) were the most cited safety equipment. The use of seat belts is an effective measure in reducing serious injuries as a result of traffic events. The National Sample Household Survey (PNAD) showed that the use of the seat belt in the front seat is more embedded in the routine of Brazilians, with 73.2% using it versus only 37.4% among the passengers in the back seat. There is not much research on motorcycle helmet use. The National School Health Survey (PeNSE) showed that, among adolescents who use motorcycles, the use of the helmet was cited by 35.0%, similar to that found by the Violence and Accidents Surveillance (VIVA) Survey 2009 [16].

The use of alcohol or drugs in addition to inexperience, search for emotions, pleasure in experiencing feelings of risk and impulsivity, are associated with the behaviours of adolescents and young adults, which may contribute to a higher incidence of nature of the accident in this group. Ethanol is a hydrosoluble substance readily absorbed by the stomach and intestine and, distributed throughout all tissues, rapidly leading to neurological changes, affecting reflexes and causing worse performance in vehicular operation [13].

The WHO recommends the adoption of sobriety checkpoints using the breathalyser, which can reduce accidents by around 20% and demonstrate excellent cost-effectiveness. This action should be carried out, on a priority basis, on weekend nights, in which most accidents involving alcoholic beverages occur [9].

Unfortunately, the use of PPE by the driver is still neglected even though it is mandatory, which favours the high rate of injuries in Brazil [1]. The literature reports that 60.2% of motorcyclists did not wear a helmet, contrary to one study in Thailand, where 65.0% reported using it [24].

Conclusion

The majority of the victims of accidents attended by MECS were male, between 18 and 27 years, involved motorcycle crashes, with almost half having ingested alcohol and the majority not using PPE, at night time and on weekdays. The lesions that most affected the victims were bruises and blunt cut, and the regions of the body most affected were the lower and upper limbs.

All of the results show that most of the victims were of legal age, but the main factor of these accidents is traffic recklessness and non-compliance, since most did not use PPE and had consumed alcohol. Through the study, we cannot say whether or not these victims had a National Driver's License (CNH), and how traffic control works in the city of

Ibiara, PB, since we are dealing with an inner city with few inhabitants.

This study evidenced the need to invest in traffic education policies, therefore, campaigns should be directed at traffic accident prevention, a greater commitment to traffic law enforcement by the authorities, and finally, educate drivers of vehicles, pedestrians and society in general about traffic. The expenses will be much lower when investing in prevention compared to the cost of hospitalisations, operations, rehabilitation and social security.

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